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Science &amp; Society 12/22/03

**Seeking security in the skies****By Samantha Levine**

The video images were clear--and clearly terrifying. A white DHL cargo jet descended through the azure sky over Baghdad, its left wing in flames. A surface-to-air missile, most likely fired by Iraqi resistance fighters, had smacked into the Airbus A-300 on November 22 as it took off from Baghdad International Airport en route to Bahrain. The three-member crew made an emergency landing, and no one was hurt. Still, the attack had a big impact, renewing fears that terrorist groups might use missiles to hit U.S. commercial planes here and abroad.

The Baghdad strike was not the first time a nonmilitary plane had felt the sting of a speeding missile. Between 1975 and 1992, insurgent groups in war zones worldwide have brought down an estimated 40 civilian airliners with shoulder-launched missiles. But now, concerns about missiles that have gone missing in Iraq have the Department of Homeland Security taking the threat to U.S. planes more seriously. In April, President Bush signed off on a plan to adapt military missile defenses for use in commercial planes. To be civilian-friendly, military defense systems must be made smaller, cheaper, and easier to operate and maintain, says Penrose "Parney" Albright, assistant administrator for science and technology at DHS.

**Sky-high.** This fall, the department asked private industry for ideas on how to do exactly that. The project has just gotten underway, but already the price tag is expected to be astronomical. Estimates for bolting the defenses onto all 6,800 U.S. commercial jets and maintaining them range from \$10 billion to \$100 billion. While there's no formula yet for how to pay the bill, everyone agrees U.S. planes must be protected. A successful attack would be a "multifaceted catastrophe" that would devastate the economy, says

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Rep. Steve Israel of New York, who thinks the government should be moving faster.

The federal program targets heat-seeking missiles, which are more readily found on the black market than are their radar-guided cousins. The diminutive weapons weigh up to 35 pounds, and they've got dead-on aim--built-in sensors make a beeline for hot jet exhaust. They're designed to hit planes as they take off and land--they can't reach aircraft flying higher than about 14,000 feet, though they can target low-flying planes up to 4 miles away.

Current military technology employs lasers and decoys to dodge heat-homing missiles. Laser beams mounted on jets' undersides jam the weapons' steering systems, much as a glaring sun disorients highway drivers, says Burt Keirstead, missile defense program manager for BAE Systems, which developed a laser system idea for DHS.

BAE is one of five companies in the running for federal research funding from DHS; the others are Northrop Grumman, Avisys, Raytheon, and Lockheed Martin. BAE's system, which will weigh 288 pounds and fit inside a canoe-shaped pod attached to the belly of a jet, would create less drag than the systems mounted on military jets. "The airlines are phobic about anything that would make them need more fuel and maybe carry fewer passengers," says Keirstead. He estimates the systems would each cost around \$1 million.

Raytheon and Avisys are developing decoy-based systems that, once a missile is detected, would dispense clouds of specially treated metal bits that instantly ignite in oxygen-rich air. The red-hot plume would bait the missile while the aircraft sailed on unharmed.

These decoy systems look good to Israeli officials, who are moving aggressively to add such defenses to planes that fly to dangerous areas, such as Africa and the Middle East. "There was no debate," says Yossi Draznin, minister-counselor for defense cooperation at the Embassy of Israel in Washington. Though the systems cost \$750,000 each, Israel's two main airlines have only 33 jets between them.

Despite last month's attack in Baghdad, DHL has no immediate plans to follow Israel's lead. Says Wolfgang Pordzik, president and CEO of DHL's Deutsche Post World Net USA unit, the current systems are "too costly and impractical." Struggling U.S. airlines support development of the new system but are worried about having to foot the full bill. One incredulous airline exec wonders how even to begin passing on such costs to travelers: "Would you like your ticket from D.C. to Florida to be \$3,000?"

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